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EDITORIAL COMMENT

ARE HIGH SCHOOL SENIORS WASTING TIME?

It is not an uncommon occurrence in our high schools for students of good ability to waste their senior year. If the loss of the year were all that was wasted, that would be bad enough, but the loss is far more serious than just that. Pupils who have been held up to good accomplishment through the freshman, sophomore, and junior years, and who are perhaps somewhat ahead of the class average in working ability, in units of work accomplished, in popularity among their fellows, all too frequently, when they reach the senior year, find their load lightened and sometimes to such an extent that it can be accomplished in half the time that should be devoted to their class work. The result is they too frequently form slovenly habits of study because they are not held rigorously to their intellectual tasks. Then, too, the attitude of teachers and fellow pupils that regards immature high school seniors somewhat as privileged characters is bad. There is thrust upon them, as it were, a new and intellectually dangerous sort of freedom which they have not been disciplined to use intelligently. The "let down" in the senior year may result, and the writer believes actually does result, disastrously for large numbers of pupils.

It is bad school organization, bad administration, bad educational guidance to permit it to happen. Numerous specific cases that have come under the writer's direct observation can be cited. By way of illustration here's a case in point.

John Doe was a student of excellent ability. His intelligence score was high, well above the median of the upper quartile of his class; he was interested in his work, and diligently stuck to his school tasks. Through the junior year he accomplished the course with credit. He was ahead of his fellows in units of work completed—needed, in fact, at the beginning of his senior year, only two units to graduate. He was allowed to register for the two units only which he needed for graduation. With what result? With all too little

work to do, he soon began to spend a good deal of his time in unprofitable ways. He actually got into habits that alarmed and annoyed his teachers and his parents. He was a senior, and seniors are privileged persons! He graduated, of course, and was ready for college—but not prepared! He had practically wasted his senior year. Moreover, the grades he made on the two courses were lower than he had made during the previous three years, and far lower than one of his ability ought to be satisfied with. He entered college. His performance there was only mediocre, mainly because at the very time when he should have been pointing himself up for the more rigorous work of college he had actually gone backward in his study habits.

Most people do their best work, it seems, when they have enough to do to occupy their time. This applies both to high school and to college students. John will perhaps graduate after spending the usual four years in college, but after the experiences of that senior year in high school, he will never be the student that he ought to have been—might easily have been—had his senior year not been wasted He will turn out, in all probability a one-talent, average sort of man whereas he was potentially a five-talent fellow. And this is only one case selected out of many.

The senior year of high school ought to be made the most profitable year of the four years a pupil spends in high school. Those who intend to go on for further training ought to be held most rigorously to severe intellectual tasks and be required to carry a normal load of work. Otherwise there is danger. Mistaken notions about education and bad school practices are leading to disastrous results for many pupils of first-rate ability. Waste in the senior year must be checked. That year should be made and can be made to yield larger results than any of the preceding years of the pupil's school life. There must be no "let-down" at this point in the student's career. Ground can be lost that may never be regained.

THE JUNIOR COLLEGE

The rapid rise of the junior college is one of the arresting facts of recent educational development in America. Within the past ten years the junior college idea has been worked out in actual practice as perhaps no other single idea of so vast significance has ever before been worked out in so short a period of time in any phase of what we have been accustomed to call higher education. The reason for this rapid development is not difficult to understand when we observe

that the pressure has come from the high school level upward rather than from the college level downward. The junior college is, in fact, but a continuation of secondary education, and it should be so regarded. But the junior college movement is destined to affect profoundly within the next ten or twenty-five years the organization of not only general collegiate education, but that of technical and university education as well, and in ways not hitherto realized. There are perfectly sound and logical reasons why it should affect our whole organization of higher education. A happier condition will come about as a result of the reorganization that must inevitably come—that is now actually well under way.

Until within quite recent years secondary education in America, contrary to the European idea and practice, was conceived of as covering the four years of high school. More recently, since the rapid development of the junior high school, it has been thought of as including the six years of the junior-senior high school organization. But now we are beginning to see more clearly that the period of secondary education, when conceived of in terms of the actual needs of immature youth, really extends upward beyond the old limits and includes most of the first two years of college work. This period includes roughly the adolescent period, and from now on in our thinking about the most effective educational procedures and organization, shall have to include the first two years of college when we think or speak or write about secondary education.

A profound change is coming about in American education that is of tremendous significance. The state universities and old-line colleges today are overwhelmed with the vast numbers of youth seeking admission. They are simply unable to provide adequately for the crowds of youth flocking to them. Two years ago one state university in the middle west sent home, after the first examination, eleven hundred freshmen! Some nine years ago a California Educational Commission, after a careful study of the opportunities and needs of higher education in that state, pointed out the fact that if the University of California were to be developed to the point where it could take care of the numbers that would be seeking admission by 1930, it would have to be expanded to provide for 30,000. That was before the rise of the junior college. That report gave a tremendous impetus to the development of junior colleges in California by a two-year extension of the high school course. Other states are now facing, or will face in the near future, the same problem that California faced in 1918. And the same solution will apply. The answer to

the problem of how to provide for the vast number of students who wish to pursue their general education beyond the usual four-year high school course is the junior college.

But the problem of numbers is not the only nor the main problem of so-called higher education that the junior college is helping to solve. Important reorganizations in the universities will come about when the junior colleges have taken over most of the instruction now given in the first two years of the standard four-year college. Within the past eighteen months this announcement went out from Johns Hopkins University:

> The President, the Trustees and the Faculties of the Johns Hopkins University believe that the time has come and the opportunity is ripe for a reorganization in this field of higher education.
>
> THE JOHNS HOPKINS PLAN
>
> To this end they contemplate the adoption of a plan proposed by the President of the University by which (1) only such students will be attracted and selected as may possess the necessary mental endowment and equipment for research; (2) more intensive training will be given such students, unhampered and unimpeded by the deadening weight of numbers.
>
> The first steps in this plan are:
>
> 1. That the only degrees to be conferred will be the degree of Doctor of Philosophy, for which four years residence would ordinarily required, and the degree of Master, for which three years of residence would ordinarily be required. In determining the requirements for these degrees, however, emphasis will be placed on proficiency and achievement rather than on years of residence.
> 2. That the University cease to provide those courses ordinarily given during the first two years of the American college.
> 3. That the conditions requisite for admission to these advanced courses in the Philosophical Faculty be determined by the professors in charge of each particular subject.

More recent still is the announcement of Leland Stanford's intention to abandon the first two years of its college work altogether, and thus advance its admission requirements by two full years. The announcement reads:

> The work of the first two years in Stanford can be accomplished by any number of other institutions, including junior colleges, and the pressure for enrollment in the graduate courses will require us to eliminate all lower division work.
>
> Modern educational systems have made the Bachelor of Arts degree no longer a terminal in the college career, but rather a dividing point.

We are beginning to base our courses upon study beyond the A.B. degree which formerly terminated four years of college work. The natural division is at the beginning of the junior year, when highly specialized work is first undertaken, and the bachelor's degree now marks the point where general education has been practically completed and the student enters a period of intensified study in his particular field.

We are organizing our departments into schools of letters, physical sciences, social sciences, engineering and the present law school, medical school, graduate school of business and others. We are studying the problems of eliminating the two lower classes, and within a short time Stanford will take students only after completion of the first two years of college work.

We may look for similar announcements from many other institutions within the next few years. We need not be surprised to see many of the state universities within the next decade advance their admission requirements by two full years and require for admission the completion of the junior college course. We may expect, moreover, to see equally important reorganization (by departments and by schools) of the offerings of the present junior and senior years. Such changes may not be feasible in all the states for some years to come, but the trend of thought is in this direction and the reorganization is already well under way.

With the multiplication of superior junior colleges two years of general education beyond the four-year high school will be possible for vastly greater numbers of American youth. This will be so by virtue of the fact that the junior college will be within easier reach of the tens of thousands of high school graduates who would not be able to attend the colleges and universities located farther away from their homes. These two years of general education will be all that the majority of youth will, for economic or other reasons, be able to take.

Those who are able to go on will have demonstrated by the end of the junior college course whether they have the ability and the specialized interest sufficient to warrant parents and educational officials in encouraging them to go further. Thus the junior college may become the selective agency *par excellence* for the technical, professional, and graduate schools.

From a purely academic viewpoint, the work o fthe first two years of the usual four-year college course can be given just as effectively and just as thoroughly in the well-equipped junior college as it is now given in the first two years of the four-year college. If this is

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*THE STORY OF TEACHER TRAINING**

By EDGAR W. KNIGHT
The University of North Carolina

IN THE SOUTH

THE development of public normal schools in the South before 1860 was naturally slow. Public sentiment in favor of public schools was slow to develop in that section, largely because of class distinctions which had developed around and as a part of negro slavery. It was but natural, therefore, that interest in normal schools, which were intended as one of the best means of elevating the common schools, would not be so strong as in New England or in some of the other states. But even in the South the obvious value of teacher training institutions was early recognized. Educational as well as other leaders in all these states in one way or another advocated and many of them urged the establishment of normal schools at public expense.

President Joseph Caldwell, of the University of North Carolina, in a pamphlet entitled "Letters on Popular Education, Addressed to the People of North Carolina", in 1832 strongly advocated "an institution for preparing school masters for their profession, upon the most improved methods of instruction." The principal of the school which he proposed was to "be selected with time and opportunity for inquiry, from the whole field of the United States." He maintained that the business of an instructor in common schools was itself "an art not to be comprehended and established in the habits of an individual without much time, education and discipline." He recommended a seminary with a two years' course of study and an observation and practice school. Those who finished the course were to be certificated as prepared to teach. He urged the necessity of training "to prepare men for the schoolmaster's profession, as the lawyer, the physician, the mariner, the cabinet maker, and men of other professions are trained with much application to their several employments." And he deplored the educational conditions in his state, saying that the "evil which is the greatest of all is the want of qualified masters."

In 1838 the directors of the North Carolina literary fund, the state's permanent public school endowment, urged the legislature to establish "normal schools". At that time the state had not provided for public schools, and the recommendation of these directors, who

* Continued from the October number of the HIGH SCHOOL JOURNAL.

formed something of a state board of education, included normal schools as an essential part of a state wide public school system. The plan proposed was made after a study of educational plans in Massachusetts, New York, Pennsylvania, Ohio, and even in Europe. In these American states normal schools developed after public elementary schools had been established. North Carolina which did not establish common schools until 1839 proposed the establishment of normal schools as an essential part of a public school system. "We must establish normal schools for the education of our own teachers, and we need entertain no hope of accomplishing the favorite object of the state in any other way," declared the report, which urged also the creation of a superintendency of common schools.

Nothing came out of this report immediately. But in 1852 provision was made for the state superintendency which was continued until 1866 under the direction of the same officer, Calvin H. Wiley. In 1853 the state began its first public effort at training teachers at Union Institute, from which Trinity College, now Duke University, later developed. Union Institute was under the direction of Braxton Craven who published in 1850 a rather comprehensive plan for training teachers. The pamphlet had wide circulation and some influence. As a result the legislature the same year gave authority to the institution to issue certificates to its graduates as sufficient evidence of ability to teach in any of the common schools of the state, without further examination by the county school boards. Two years later a new charter was granted the institution and its name was changed to Normal College. The governor of the state was made *ex officio* president and the state superintendent *ex officio* secretary of the trustees. From that time until 1859, when the name was changed to Trinity College and all public relations severed, Normal College continued its work of training teachers in a course that comprised the work of three years. The state made no other attempt at the public training of teachers, however, until 1876.

As a result of educational conventions in Virginia in the 1840's definite recommendations were made for the establishment of normal schools in that state. One of the most valuable of these was prepared by Henry Ruffner who was president of Washington College. (now Washington and Lee University), and father of William H. Ruffner, Virginia's superintendent of public schools from 1870 to 1882. Henry Ruffner presided over a convention in Lexington in 1841, and he presented to the legislature a state school plan which included, among other modern features, schools designed especially

for the training of teachers. Later a convention held in Richmond made the same recommendations to the legislature, but it was not until 1884 that the Old Dominion established a normal school.

The story is much the same in South Carolina which also delayed action, although a school system, principally for poor children, had been established by the state in 1811. As early as 1839, however, Professors Stephen Elliott and James H. Thornwell, of South Carolina College, were requested by the governor to make a study of conditions in the state and report an improved school plan. The report pointed out the need for normal schools and urged that they be established. In 1847, as a result of action by the State Agricultural Society the year before, appeared another report, prepared under the direction of R. E. W. Allston, urging state supervision and a normal school with a "model school attached." Later a legislative committee of five members, with Henry Summer as chairman, made similar recommendations, which were substantially endorsed by an educational convention in Columbia still later. Charleston, which by legislative permission inaugurated a school system in 1856, two years later established a girls' high school with a normal department. The value of normal schools was recognized and their establishment by the state was urged, but nothing came of the recommendations, and it was not until 1895 that South Carolina established a state normal school.

In 1851 the legislature of Florida established the East Florida Seminary and the West Florida Seminary, and the first purpose of these institutions was "the instruction of persons, both male and female, in the art of teaching all the various branches that pertain to a good common school education; and, next, to give instruction in the mechanical arts in husbandry and agricultural chemistry, in the fundamental laws, and in what regards the rights and duties of citizens." But the teacher training departments seem not to have been very strong, and not until 1887 did Florida establish a state normal school.

In 1858 the legislature of Louisiana established a normal school department in the public high school in New Orleans, and the following year an appropriation of $5,000 was made. In 1860 the sum of $10,000 was appropriated for buildings on condition that the city would appropriate a similar sum, and forty-eight pupils to be selected by the governor were to be admitted free of tuition charge. A legislative appropriation of $3,000 was made to this school in 1862. The first state normal school was established in this state in 1884.

In 1848 the legislature of Mississippi considered the question of establishing a state institution for the training of teachers and the trustees of Mississippi College at Clinton made an effort to have that institution transformed into a normal school, but the legislative committee on normal schools that year made an adverse report on the subject. In the same year, a special committee on normal schools was appointed in the House, and it made a report and offered a bill to establish a state normal school. The House ordered five hundred copies of the bill printed and then laid the report and the bill on the table and gave it no further consideration. Two years later the general school commissioner, in bringing the matter to the attention of the legislature, said that the state was forced to look to other sections of the nation and to other countries for teachers and "to overlook their foreign accent and stupid vulgarity, or be entirely deprived of school privileges." Mississippi established its first state normal school in 1910. The institution appeared in Arkansas in 1872, in Texas in 1879, in Georgia in 1889, in Maryland in 1896, and in Kentucky, Alabama, and Tennessee after 1900.

Condition About 1870

By 1870 the idea of separate and distinct schools for the professional or special preparation of teachers had been generally accepted, in theory at least, in the United States, and provision for such schools had been made by twenty-two states. During this early and somewhat experimental period there was no common agreement in theory or practice upon the length of teacher training courses which varied from one to three years. In his report to the legislature in 1866 the superintendent of common schools in Ohio stated that the course in most of the schools of the United States was two years in length, "with a one year's course in a few of them." The primary purpose of the schools was to increase the teaching power of the prospective teachers through exercises which undertook to impart to the students "a thorough teaching knowledge of all the branches ordinarily taught in common school. This includes not only a mastery of the subjects as knowledge, which is the first requisite for successful teaching, but also a mastery of them as subjects to be taught to others. This is the one distinctive idea which runs through every lesson and exercise."

Another purpose was to furnish "the prospective teacher a practical knowledge of the guiding principles of his art, and to enable him to reduce such principles to something like a philosophical

system. In other words, the second aim is to teach the science of education. This is usually sought to be accomplished by lectures."

To acquaint the prospective teacher with the "best methods of instruction and government, including the methods specially applicable to each stage of the child's progress and to each branch of knowledge" was another purpose of normal school instruction as indicated in this report in 1866. Each recitation was "conducted with a view of unfolding the true method of teaching the topic." Finally, to enable the student to acquire "skill in the art of teaching by an application of his knowledge of principles and methods in actual practice", in the model school and under the supervision and criticism of skilled teachers, was also an important aim of normal school work. Thus, by the close of this early period, or down to about 1870, the normal school was emphasizing the academic or subject matter courses found in the common schools, somewhat old methods of teaching, and the demonstration of the conventional teaching technique.

Teachers' Institutes

While the normal school was yet in its infancy, itinerant or moving normal schools, generally known as teachers' institutes, appeared as an attempt to meet the need for trained teachers. The institute was probably distinctly American in origin. For a time it did the work of the normal school in many states, by offering to teachers opportunity to review the subjects taught in the common schools and to study methods of teaching and school management. Often the institute was inspirational and entertaining. General sessions, open to the public, served to create interest in public education. Through the institute also new school subjects were often introduced. The work at best was doubtless fragmentary and haphazard and the effort to make the lectures entertaining was sometimes ridiculous. Barnard cautioned the teachers in his institutes in Rhode Island against considering them substitutes for thorough study and practical training. The term varied in length from a few days to six weeks. Attendance was at first voluntary and fees were charged those who enrolled. Later, however, attendance came to be more or less compulsory and the cost of the institute came to be borne by the public.

Beginning in Connecticut in 1839, under the leadership of Henry Barnard, the institute soon found its way into other states. They were developed in many parts of New York by 1844, and in 1847 the legislature gave aid to provide them in the various counties.

As early as 1844 Rhode Island made it the legal duty of the state commissioner of public schools to establish teachers' institutes "where teachers and such as propose to teach may become acquainted with the most improved and successful methods of arranging the studies and conducting the discipline of public schools." A "model school" was established in connection with the early institute in Rhode Island.

The institute appeared in Massachusetts and Ohio in 1845, in Vermont, New Hampshire, Michigan, and Illinois in 1846, in Maine and New Jersey in 1847, and in Pennsylvania in 1848. By 1860 the institute was found in a dozen or more states. North Carolina seems to be the only Southern State which had institutes before the Civil War. These were established by W. H. Doherty who came to the state from Antioch College in Ohio where he had been associated with Horace Mann. After 1867 the Peabody Fund greatly stimulated the development of the institute in the South.

In the early institutes instruction was given by well known teachers, including Charles Davies, the author of mathematical textbooks, Thomas H. Gallaudet, Henry Barnard, Horace Mann, James P. Wickersham, William Russell, Louis Agassiz, and Arnold Guyot. A Providence newspaper, commenting upon the work of the institute in Rhode Island, said: "No teacher can have witnessed the courteous manners, and the thorough instruction, even for a day, of such gentlemen, (as have favored this institute by their presence and services) without having a better standard of teacher in his mind." When state school systems become better organized after 1860 the teachers' institute became a somewhat regular feature of public school work. In some states it is still conducted, but its place is rapidly being taken by summer schools, which have become numerous and popular. The need for it has been decreased also by the increase in normal schools, teacher's colleges, and schools of education in colleges and universities. As professional standards for teachers are raised, as teachers' meetings and conventions for the discussion of educational topics of current interest, and other means of improving teachers in service are developed, the teachers' institute will probably disappear entirely.

Later Development

In the early period of state normal school development the materials of professional instruction were rather meager. There were few books on teaching. Hall's *Lectures on School-Keeping*

appeared in 1829 and *Theory and Practice of Teaching* by David Page, the first principal of New York's first state normal school, appeared in 1847. Educational journalism which had a modest beginning in the 1820's did not gain particular strength until much later. Methods of teaching had not undergone much change since colonial times. Subject matter and discipline claimed most attention in the schools. The child had not yet been recognized as the center of the teaching process.

Beginning with Pestalozzianism, however, which came in chiefly through the Oswego movement after 1860, materials of a professional nature slowly became available for the work of the normal schools. Later Herbartian and Froebelian ideas added to the professional subject matter which could be used in teacher-training schools. These institutions, both private and public, showed rapid growth after 1870. In addition to the publicly-supported normal schools found in twenty-two states in 1870, a few cities were maintaining this type of institution to train and improve their own teachers, and there were many private normal schools also.

After 1870 the normal school idea grew somewhat rapidly. By 1900 the number of public schools engaged in the training of teachers had increased to 170 and the private normal schools numbered 118. The public normal schools had above 43,000 students and graduated in that year 8700; the students in the private schools numbered 20,000 and there were 1600 graduates. The leading subjects taught in the normal schools of the period included the history of education, theory of education, school organization and supervision, school management and discipline, school hygiene, psychology and child study, ethics, school laws, and practical pedagogy.

The typical normal school, as late as 1900, provided only two years of work beyond the high school. For a long time it was essentially a high school with some professional work added. Generally the normal school admitted its students from the elementary school; and its primary purpose was to train teachers for the common schools. In some states, particularly in the South, normal schools are even now found with high school departments.

Since 1900 the normal schools have tended to increase their requirements. With the growth of public high schools it has been less and less necessary for the normal schools to provide high school instruction; they have been able to require high school graduation for admission. As early as 1918 nearly half the states had fixed this as the standard of admission. Today the commonly accepted stan-

dard of professional training for teachers in the elementary schools is two years of work beyond graduation from a standard high school. This standard is generally met by fulfilling the requirements for a diploma from most of the normal schools. Graduation from a standard college, based upon the completion of a standard high school course, is today generally regarded as the minimum academic preparation necessary for teachers in high schools.

Present Tendencies

Historically, however, the certificate that was accepted for teaching in the elementary schools was also accepted for high school teaching. This practice was followed generally before high schools were standardized. With high school standardization, however, it seemed desirable that high school teachers should have a broader scholarship and longer training than the normal schools furnished through their curriculum; and the tendency developed to require college graduation of high school teachers. The normal schools thus found themselves in their original position of training teachers only for the "common schools", which was the purpose of the normal schools in the days before public high schools developed.

In this way arose the theory that one type of teacher training differs from another type in dignity. The work of preparing teachers for the high schools came to be considered a less humble service than that of preparing them for the elementary schools. Moreover, the chief officer of normal schools, which trained elementary teachers, was generally called "principal", and the heads of colleges, which gained a monopoly upon the training of teachers for standard high schools, were known as "presidents." And one educator should not differ from another educator in a democracy. Graduates also were ambitious to have a "big" institution for their *alma mater*. These were among the conditions which led to the movement in recent years to change the name of teacher training institutions from "normal colleges," which formerly conferred no degrees, to teachers' colleges with the power to confer degrees. Colorado, Illinois, Kansas, and Missouri were among the first states to permit their normal schools to become teachers' colleges with degree-granting privileges. Today the tendency is toward four-year colleges to be developed and maintained as a part of the public school system, for the professional preparation of teachers for all kinds of elementary and secondary public schools. The National Association of Teachers Colleges now has a membership of many institutions.

Standards of teacher-training have greatly improved in the last quarter century. But many of the agencies for the professional preparation of teachers are clearly below the level of effectiveness which modern educational ideas demand. One of the criticisms often heard is that the work of training teachers, which is essentially of collegiate grade, whether it is given in normal schools, teachers' colleges or schools of education in colleges and universities, is that it is too often below the level of work done in colleges of liberal arts. Surveys of teacher training work in such states as Pennsylvania, Massachusetts, and Louisiana indicate other weaknesses. It appears from such surveys that students preparing to teach are in general of a lower economic status; that the teachers of teachers as a class are relatively inferior in scholarship, and that their salaries are less; that teacher training institutions are relatively deficient in physical equipment; that many of them are not adequately equipped with model or demonstration schools; and that public funds for teacher training institutions are proportionally less than those appropriated to liberal arts colleges and agricultural colleges.

The latest official reports show 382 normal schools and teachers colleges which are the principal agencies for the preparation of teachers. In these institutions more than 245,000 students are enrolled. City normal schools and colleges and teacher training departments in high schools have more than 172,000 students who are preparing to teach.

(The concluding article in this series will appear in our December issue.)

DR. ELIOT'S FINAL WORD TO YOUNG AMERICA

"If I had the opportunity to say a final word to all the young people of America, it would be this: *Don't think too much about yourselves.* Try to cultivate the habit of thinking of others; this will reward you. Nourish your minds by good reading, constant reading. Discover what your life-work is, work in which you can be happiest. Be unafraid in all things when you know you are right."

Thus spake Dr. Charles William Eliot but a few weeks before he passed to his reward. And he added:

"*Be unselfish.* That's the first and final commandment for those who would be useful, and happy in their usefulness."

NORTH CAROLINA HIGH SCHOOL CONTESTS—A REVIEW FOR THE YEAR 1926-27

By E. R. RANKIN

THREE HUNDRED and forty-three high schools took part during the school year 1926-27 in one or more of the State high school contests, which were conducted under the general auspices of the University Extension Division of the University of North Carolina. The number of contests conducted during the year was 16. In its work with these contests the University Extension Division acted in co-operation with several departments and associations.

The various contests which were carried on during the year, together with the number of participating high schools in each contest, were as follows: debating contest, 223 high schools; basketball contest, 129 high schools; baseball contest, 73 high schools; French contest, 52 high schools; dramatic contest, 45 high schools; football contest, 38 high schools; mathematics contest, 36 high schools; Latin contest, 33 high schools; track meet, 18 high schools; poster contest 18 school systems; standard physical ability test, 16 school systems; tennis tournament, 16 high schools; typewriting contest, 8 high schools; newspaper contest, 8 high schools; Spanish contest, 4 high schools; magazine contest, 3 high schools. The total number of high school entries in the 16 contests was 720.

The State championships in the different contests were won by high schools as follows: debating contest, Greensboro high school; baseball contest, Winston-Salem high school; basketball contest, Durham high school; football contest, Sanford high school; French contest, Davidson high school; Latin contest, Wilson high school; magazine contest, mathematics contest, Charlotte high school; newspaper contest, Spanish contest, Statesville high school; tennis tournament, Charlotte high school; track meet, Charlotte high school; typewriting contest, Winston-Salem high school; dramatic contest, Charlotte high school in the first division, and Derita high school in the second division; poster contest, Durham high school winner of the high school division. Winston-Salem was winner in the grammar grade division of the poster contest.

The debating contest referred to above was the annual debating contest of the High School Debating Union of North Carolina, which culminates each year in the final contest for the Aycock Memorial Cup at the University of North Carolina. The athletic

contests referred to were the annual State high school championship contests of the High School Athletic Association of North Carolina. This association now has a membership of 273 high schools. The contests in academic subjects were conducted under the joint auspices of the University Extension Division and the several University departments concerned. The poster contest was conducted by the University Extension Division in co-operation with the North Carolina State Branch of the National Congress of Parents and Teachers.

The Charlotte high school took part in 14 of the annual contests during the year 1926-27. The Asheville and Greensboro high schools took part in 12 of the annual contests, each. The Winston-Salem high school took part in 11 contests. The High Point and Raleigh high schools participated in 10 contests each. The Durham, Rutherfordton-Spindale, Salisbury, and Wilson high schools entered 8 of the contests, each. The Chapel Hill, Nashville, New Bern, and Sanford high schools entered 7 of the contests, each. The Albemarle, Concord, Fayetteville, Forest City, Laurinburg, Shelby, Statesville, and Yadkinville high schools entered 6 of the contests, each. The Edenton, Hickory, Kernersville, Reidsville, and Wilmington high schools took part in 5 of the contests, each.

Eighteen high schools participated in four of the contests, each, during the year. These schools were as follows:

Benhaven, Black Creek, Cherryville, Ellerbe, Gastonia, Gibson, Goldsboro, Hamlet, Hendersonville, Lincolnton, Madison, Monroe, Pomona, Roanoke Rapids, Rockingham, Troutman, Warrenton, Washington.

Thirty-four high schools participated in three of the contests, each, during the year. This list of schools is as follows:

Apex, Aulander, Bailey, Belmont, Benson, Candler, Canton, Clarkton, Creedmoor, Davidson, Dunn, Faison, Four Oaks, Hertford, King's Mountain, Leaksville, Lenoir, Lexington, Lumberton, Morganton, Mount Airy, Mount Olive, Oxford, Rich Square, Rocky Mount, Rose Hill, Roxboro, Scotts, Sparta, Spring Hope, Trenton, Wadesboro, Weldon, Wilkesboro.

Eighty high schools entered two of the State contests. This list follows:

Alexander-Wilson, Ansonville, Badin, Bessemer, Bethany, Beaulaville, Blackburn, Bonlee, Burlington, Candor, Cary, Carthage, China Grove, Clayton, Conontentnea, Conway, Copeland, Dallas, Derita, Dobson, Elizabeth City, Erwin, Eure, Franklinton, Fremont, Garner, Glen Alpine, Granite Quarry, Green Level, Green's Creek, Har-

mony, Henrietta-Caroleen, Huntersville, Jackson, Kenly, Kinston, Landis, Lattimore, Liberty, Lillington, Louisburg, Lowell, Magnolia, Mangum Township, Marion, Mars Hill, (Madison County), Matthews, McLeansville, Mocksville, Monticello, Mooresville, Morven, Mount Holly, Moyock, Newell, North Wilkesboro, Oriental, Parkton, Prospect, Red Oak, Rock Ridge, Rowland, Selma, Smithfield, Snow Hill, Southport, Stanley, Summerfield, Sumner, Sylva, Taylorsville, Tryon, Union, Vanceboro, Wallace, Walstonburg, Warsaw, Waynesville, Wendell, Woodland.

One hundred and eighty-four high schools participated in one contest. This list is as follows:

Ahoskie, Alamance, Allen, Alliance, Altamahaw-Ossipee, Arapahoe, Asheboro, Aurelian Springs, Ayden, Bain, Banoak, Belwood, Benvenue, Berryhill, Bessemer City, Bethel, Big Willow, Biltmore, Black Mountain, Bladenboro, Boiling Springs, Bragtown, Brevard Institute, Bryson City, Bunn, Burgaw, Calypso, Casar, Central, Cherokee, Churchland, Claremont Springs, Cove Springs, Creswell, Crossnore.

Dover, East Bend, East Flat Rock, Ebenezer, Edward Best, Eli Whitney, Elizabethtown, Ellenboro, Elm City, Fairmont, Franklin, Fruitland, Glade Valley, Glenwood, Goldston, Grace, Graham, Greenville, Grover, Harrellsville, Harrisburg, Haw River, Hayesville, Helena, Hiddenite, Hildebran, Hillsboro, Hobbsville, Hollis, Holly Springs, Hot Springs, Indian Trail, Jackson Springs, Jacksonville, Jamestown, Jamesville.

Kannapolis, Kelford-Roxobel, King, Knightdale, Lafayette, LaGrange, Lansing, Leggett, Leland, Linden, Long Creek-Grady, Marshall, Mars Hill (Bertie County), Marshville, Maxton, Maysville, Mebane, Middleburg, Midway, Millbrook, Monogram, Morehead City, Mount Ulla, Murfreesboro, Newton, North Brook, North Charlotte, Norwood, Oakhurst, Old Fort, Old Town, Pantego, Paw Creek, Philadelphus, Piedmont, Pikeville, Pineville, Pollocksville, Poplar Branch, Princeton, Raeford, Ramseur, Randleman, Red Springs, Richfield, Republican, Robbinsville, Rockwell, Ruffin, Rural Hall.

Saluda, Sand Hill (Candler) Sandhill Farm-Life (Vass), Scotland Neck, Seaboard, Seventy-first, Severn, Sharon, Sherrill's Ford, Shiloh, Siler City, Smith Grove, South Edgecombe, South Mills, Southmont, South River, Southern Pines, Spring Hope, Startown, Stearns, Steele Creek, Stem, Stokesdale, Stovall, Sunbury, Sunnyside, Teacheys, Thomasville, Trinity, Tryon (Bessemer City), Union Grove, Unionville, Valley Springs, Virginia-Carolina, Wake Forest, Wakelon, Walkertown, Washington Institute, Waxhaw, Weaverville, Weeksville, Welcome, White Oak Academy, Whiteville, Williamston, Wilton, Woodfin, Youngsville, Zeb Vance.

*METHODS IN EDUCATION**

By Dr. Frederic M. Hanes
Winston-Salem, N. C.

The executive secretary of the University, in extending the kind invitation to speak to you today, assured me that very little was expected of me except a reasonable brevity. This I promise, and only on terms as fair as these, would I have the temerity to address such an audience on the subject I have chosen.

Our very presence here today attests our love and veneration for this lovable and venerable place. An expression of devotion is never expected of a University man; it is tacitly understood. I shall not waste your time, therefore, with a eulogy that is superfluous. Let us turn our thoughts to more constructive things.

Nothing, perhaps, appeals more strongly to the average man than the opportunity of telling the other fellow how his work should be done. Such critics are rarely constrained by the records of their own achievements. One's own work seems so difficult; the other fellow's so easy. With this explanation, it will not cause you too much annoyance, I hope, when you learn that I have chosen to talk in the few moments at my disposal of the *Methods in Education*.

Every man over forty does not become an Educator, as he is said to become a physician; but no man can struggle for a quarter of a century to educate himself, and fail to produce certain by-products of thought on the subject of Education in general. He inevitably surveys his own painful wanderings, and believes he can see from the vantage ground of middle-life the mistakes that led him into fruitless deviations from his course. He is very lucky indeed if his life is not embittered by the thought that he took the wrong road at the very beginning of the journey.

Education has become a very complex and very expensive thing. Each year the facilities of this university are multiplied, only to see them immediately rendered inadequate by the ever increasing surge of students. The belief has spread throughout our state that a training, superior and very essential, is furnished here; that the young men who imbibe the waters of this Pierian spring gain a running start in the race of life on those forced to quench their thirst at less limpid and refreshing founts. Men who have been denied a college education frequently develop an inferiority complex, despite the fact that they might have done quite as well, indeed often better, than their college-trained competitors. Parents send their sons to the univer-

* University Day Address delivered at the University of North Carolina, October 12, 1927.

sity, often at great sacrifice, in the hope and confidence that something will be done to them here that will make them superior fellows, men to command life, and meet its problems in a way their parents could never do.

It is, then, only fair to ask if this university, with its great investment in men and money, is producing a finished product which satisfies these high hopes and expectations. Frankly, I do not think so!

An educated man, whatever else he may be, is a man with a mind so trained in the technique of thinking that it is not daunted by any problem of life, however strange, however formidable. Is our modern system of university training designed to produce such minds? Again, I do not think so! To be able to think deeply and clearly on any subject one must have learned, through patient effort, to think deeply and clearly. Learning to think is a toilsome and painful thing, and consequently men adopt any expedient, however laborious, to avoid the exercise of their mental functions. Now I believe that our present methods of education not only do not train the mind to profundity of effort, but that, on the contrary, they produce a slick superficiality, a shiny veneering, which thinly covers a vast amount of ignorance and ineptitude. Our college graduates know too much about everything, and far too little about some one thing. How could it be otherwise? In four brief years the student is hurried through the crowded museum of human knowledge. He dare not pause for thought, for the dreadful examinations are ever upon him (and has there ever existed a teacher who did not consider a failure in his own particular subject evidence of absolute mental incapacity!). Regardless of a possible desire on the student's part to pause in his horizontal pursuit of knowledge and proceed in a vertical direction for a while, he is forced to skim the surface that leads to the precious degree. He ends by being the Jack of many trades and the Master of none.

It proves nothing to say that the college graduate does, on the whole, do better in after life than the man who has not gone to college; for college men are a roughly selected group. Their natural superiority, plus their four years of college training, should give them a margin of advantage greater than is the case in actual practice. We do not find the insistent demand for college men on the part of employers that one would expect. Indeed the painful realization is frequently forced upon the recent graduate that his college education is regarded with suspicion. He is forced to prove that it is not a handicap.

Furthermore, the graduate who decides to enter a profession—a decision too long deferred and then hastily made in the panic of real-

ization that at last a decision is inevitable—finds himself badly equipped for the undertaking. He realizes too late that he has been sacrificed to the terrible delusion that men gathered at random, and pitched headlong into the sea of education, will all eventually swim ashore. To put it plainly, I do not believe the average college graduate shows evidence of an ability to use his brain at all commensurate with the time and money expended in his education.

If this is true (and, after making due allowance for the exaggeration of emphasis, I believe it is true) something must be wrong with our methods of education. It seems to me two things are wrong. One, we do not selectively adapt education to the individual, and, two, we veneer the student instead of impregnating him. Please permit me to elaborate briefly these rather glib accusations.

We know from our daily observations that individuals vary greatly in their intellectual powers and aptitudes. Mental food for one causes acute intellectual indigestion in another. Students, then, should be classified as regards their intellectual capacities and predilections. I would suggest that first year students be accepted only on probation. This first year would be devoted to the study of the student's mentality. Under the guidance of the psychologists, the curriculum would be designed in the first place, to test thoroughly his ability to accept *any* education and, secondly, to determine what *kind* of education his mind was best fitted to receive. Obviously the effort would be to fit the round peg to the round hole and the square peg to the square hole. I can easily conceive of a separate department, with a full complement of professors and assistants, devoting its energies to research in this great field. It might be called the Department of Pegology.

It should contain a sub-department of Eugenics, where full and accurate data upon the probationary students' antecedents would be assembled by field-workers. The Department of Biology could easily meet this very practical demand. He should be subjected to a most thorough physical examination, and defects, manifest or potential, would form an important part of the collected data. During the course of the year the candidate for admission would be analyzed by every kind of psychological test and his aptitudes and predilections would be thoroughly investigated. Correctible deficiencies should be carefully noted. In the end a mass of data would be available that would certainly permit a reasonably accurate classification to be made. I believe, indeed, that human minds can be classified as readily as horses at a horse show, or cattle at a fair.

Perhaps I am unduly influenced by an incident of the World War. A friend of mine was sent to one of the training camps to organize and train a company of two hundred men. When he arrived he found the two hundred men but no officers. He was confronted by the task of selecting some twenty non-commissioned officers at once. He knew nothing of the men and had no opportunity of studying them thoroughly, and yet the efficiency of his organization depended on his selection. Just at this time he fortunately met, at the officer's mess, a captain, who had been a psychologist in private life, and who was engaged in applying psychological tests to army recruits. The psychologist readily agreed to apply the modification of the Binet-Simon test, used by the army, to the two hundred soldiers. As the result of the test the men were graded and from those having the highest grades the non-commissioned officers were selected, careful attention being paid to their various capacities as roughly indicated by the tests. My friend tells me that not only did he secure by this means very efficient officers, but that during the course of their subsequent service in France, these men proved, with one or two exceptions, to be the best in the company.

Dr. Samuel Johnson, in his life of the great English physician, Sydenham, makes the following observation: "That the strength of Sydenham's understanding, the accuracy of his discernment and the ardour of his curiosity, might have been marked from his infancy by a diligent observer, there is no reason to doubt. *For, there is no instance of any man whose history has been minutely related, that did not in any part of life discover the same proportion of intellectual vigour.*"

The well-proven facts of heredity support this observation; for we know that all that we are or ever can be is contained in the chromatic substance of the fertilized egg. Our capacities and aptitudes, our weaknesses and deficiencies, are all predetermined by our maternal and paternal chromosomes. Environment and training may develop our chromosomic heritage; but their essential and basic character cannot be changed. They are present in the ovum, and unfold themselves inexorably with the development of the individual. The child is inevitably father of the man.

With accurate data available, then, it would not be difficult to direct the students' future education. For example, it would be found, I feel sure, that many students lack mathematical sense. Such students should be absolutely forbidden any course in mathematics higher than algebra, let us say. It should be carefully explained to

them that they are mathematical dunces, and that they must never pretend to any more knowledge of this science, than that required to balance their bank-books. This would be no humiliation to them; for they would soon discover that most men lack even this vestige of mathematical sense.

Again, the prospective student whose chart showed that he perspired profusely with every effort at ratio-cination (rash-ios-cination) would be sadly, though firmly, denied the solace of the higher philosophies. The charming absurdities of the metaphysicians are not for minds like this! The tone-deaf would be advised against music, and those with defective eye-sight against professions that require constant use of the eyes. Finally, and most important of all, candidates whose data revealed them to be unfit subjects for educational efforts would be denied admission to the university.

Needless to say, the reverse of all this would hold true, and the student with average or unusual endowments, would be so directed that he might cultivate that which he has, and waste no time on vestigial remnants of talents which he has not. We need have no fear that the latent genus homo is an event so rare, that its very strangeness would lead to its immediate detection.

Under such a selective system how different would be the work of our teachers. How much more profitable and pleasant to devote their energies to the cultivation of proven talents and aptitudes, than to waste their enthusiasm on the irresponsive, the dull, the deficient!

The objection will be promptly made that all this is in the highest degree impracticable. A fair answer would be that it has certainly never been proven impracticable by trial! On the contrary, the Johns Hopkins Medical School has for the past six or eight years applied the principle of rigid selection to its students with most satisfactory results. It has been the experience of this, the foremost of our medical schools, that a certain definite percentage of mentally and physically unfit succeeded each year in matriculating, only to fall by the wayside after a longer or shorter struggle. Such conditions were recognized as morally and economically wrong. A study of the problem revealed means of solving it. The process of selection was applied more drastically. Regional representatives were appointed before whom the candidate must appear for a detailed personal and medical investigation. The result has been, as I was recently informed by the dean of this school, a brilliant vindication of the principle of careful selection!

Curiously enough, we find a perfect example of selection and classification in the realm of university athletics. Perhaps that is one reason why this field of endeavor produces such marked efficiency. We do not think that because a man shows aptitude for basketball, he should of necessity be a good half back, or excel upon track. Nor do we think it strange or inhuman that those without athletic ability in one sport, very promptly specializes in that sport, to the great satisfaction of all concerned. He is not accused of neglecting his physical development because he does not engage in every known branch of athletics. Is it not possible that there is a lesson to be derived from this humble source for those who direct the development of the student's mind?

It is easy, however, to foresee the development of certain difficulties in applying the principle of selection to candidates for admission to *this* university. The judgment of the Department of Pegology would not in every instance coincide with that of the student or his parents. This would lead to complications; for parents persist in believing that a fine purse can be made from their own particular "sow's-ear." Some one has remarked that all children are prodigies until they arrive at the age of competition! Then again, under our scheme, many candidates would necessarily be refused admission. Even the most patient explanation would probably not convince the taxpayer that he had not the right to use the state university as a medium for squandering his money as he wished. But probably the most serious objection of all is that the debarred candidates would almost surely be elected to our state legislature, and cause our budget committee great annoyance. These, and possibly other objections, need not concern us. They will form very proper subjects of research for the Department of Pegology.

Having, then, with patience and care selected and classified our students, the problem of really educating them could be undertaken with hope and confidence. Our aim should be above all to shun superficiality. The student should go deeply and thoroughly into one subject, even at the cost of limiting his acquaintance with others. For it is only by profoundly penetrating into one very limited field of knowledge that the mental powers can be trained in the essential technique of close and accurate thinking. Without such training the mind remains, a chaotic and unreliable instrument, incapable of functioning efficiently. Am I going too far when I say that the vast majority of college graduates have never been forced to use their brains profoundly? They often use their memory to good advantage, but

need for originality of thought has never been forced upon them. They take what their instructors may choose to give them. In the words of Dr. Wendell Holmes, "they remain babes in knowledge, not able to tell the breast from the bottle, pumping away for the milk of truth at all that offers, were it nothing better than a professor's shrivelled forefinger."

There is a remedy, it seems to me, for this condition. I would have something as follows said to our students: Within the range of your proven capacities and aptitudes, you may choose the subjects of your study. You will be aided in the planning of your curriculum by a committee of experts. Your education will not be left to chance or caprice; for the facilities of this university are too valuable to waste. A problem for research will be decided upon for you. Three years from now you will be expected to have mastered this problem. Only after proof of this will you be granted a degree. Throughout your three years' course your progress will be closely supervised. You matriculated in this university to have your mind trained. Before receiving a degree you must prove that you have mastered the technique of thinking accurately on at least one subject. Having done this, you will have acquired the ability to think with reasonable accuracy on any subject. You will then be potentially educated, because you will know how to use your brain.

There are those, I am fully aware, who will shudder at such a scheme of education as we have discussed. Lovers of such vague terms as "a general education," or "a classical education" or "education in the humanities" will heartily disapprove. There are many who study Latin and Greek for six or eight years, and are still unable to read in either tongue, but who have in some subtle way, acquired a classical education. It will be objected that training at all similar to that suggested would develop narrow, one-sided minds. On the contrary, I believe that a mind so trained would gain its first vista of true knowledge and would subsequently do what every mind is eventually compelled to do, namely, educate itself.

"A good thing to remember
And a better thing to do
Is to work with the Construction Gang
And not with the Wrecking Crew."

HOW MUCH IS TWO YEARS OF HIGH SCHOOL FRENCH?

By Hugo Giduz
The University of North Carolina

One often hears both teachers and students of modern languages severely criticized because, after having studied French or German or Spanish for two whole years, the student is incapable of carrying on a conversation, or even understanding a native when speaking in his language. Are we fair to either teacher or student in this criticism? Just what do we mean when we say that the student, I refer to the average high school student, has studied let us say French, for two years.

The average school year is of 36 weeks' duration. The average class period is about 45 minutes. At the maximum, if there were the full number of recitations each week that would mean that the teacher could hold 180 recitations per year of 45 minutes each: i.e., a maximum of 135 hours. Of course this maximum can never be attained for we have to take out vacations and holidays which means at least 15 recitations lost. Then we have at least one day lost at the opening and one at the close of the school year. Add to this absences and examinations, not to mention recitations lost through assemblies, or other special gatherings for which class periods are taken and we have a minimum of 16 periods more that are lost. As a matter of fact this estimate is far below the actual number usually lost. But I rather err on this side of the balance in order not to be accused of unfairness in favor of my proposition. So we must deduct for those 16 periods lost 12 hours from our 135 leaving 123 hours which is the maximum amount of time that the pupil is exposed to French during the year in the classroom. The exceptional student will possibly spend as much more time on his work out of class. The average slightly less; the poor student—we had better not consider him at all in our reckoning, for he will not "take French" no matter how much nor how long we expose him to it.

Adding the class time of 123 hours to the time spent outside, 123 hours, we have a resultant of 246 hours during the year that the student may be exposed to French. That is, he has the mathematical equivalent of about 25 days of ten hours each.

Let us suppose that we take the same child and set him down in a Provincial town in France—we better not consider Paris, for there he will be exposed only to more English on the boulevards. Let

him spend 25 days in a small town where he will here only French. He will be steeped in it on all sides at all times, both orally and visually. During his ten hours a day his mind will be continuously working in and on French. He will not have the inhibitions that are daily present in the American school. It will be a concentrated dose of language. He will not be jumping from French to English, to Latin, chemistry, algebra, play, Saturdays, Sundays, holidays, vacations without French, and have time to forget what he learned in class.

Even so, at the end of his 25 days, will he know more French? Yes, he will, of a certain type. He will be able to understand his teachers and the merchants. He will be able to make replies in French. He will have picked up a bit of "argot" that he would never get in America. But doe he know more French in a general way? More grammar? More literature? Will he write more accurately? Perhaps, but I doubt it.

Let us take the pupil of a two years' course with 50 days and compare him with the pupil of 50 days in France. There I believe we shall begin to see that the pupil in France will begin to forge ahead faster than the one in America. But isn't it reasonable that he should?

Let us consider one of these pupils who has had his "two years" of French in an average American high school with a fairly good teacher and take him to France into the same town with his compatriot who has spent his 50 days there in the study of French. The former will of course feel thoroughly lost at first and flounder badly. But at the end of two or three weeks' time I feel sure that he will not be far behind the other pupil and at the end of two or three months he will in all probability be the equal of the other and in some respects, possibly the superior. Though he should never even attain an equal mastery of French, are we to feel that his "two years" have been wasted? If his teaching has been at all acceptable, and in the main I believe that the average teacher giving two years of French in a high school does achieve sufficiently satisfactory results to be considered acceptable, he will be able to build on this foundation a decent structure. He will find that his "two years", i.e., his "50 days" have been the equivalent of "50 days" in France. With such results possible in our "two years' course" I believe we need not feel altogether discouraged over the results attained.

A QUARTER-CENTURY OF HIGH SCHOOL BIOLOGY

By Carleton E. Preston
The University of North Carolina

It is now about twenty-five years since the writer, then fresh from graduate study at a large university, entered upon a teacher's life, totally without experience in the ways of high school and class administration and in the methods of teaching technique. Such was the manner of the time. Opportunities for professional training were less than today, and less valued. Possession of an advanced academic degree, especially of the doctorate, was of itself considered sufficient proof of teaching ability. Most young teachers received no other training than that gained through the school of experience, or through experience in school, whichever way you wish to put it.

As I recall it, it seemed to me that the first thing I had to learn was to discard much of the college viewpoint, which centered largely around research and specialization, and learn again from an entirely different angle the subject of biology, in which I had specialized. It was a difficult task to refrain from doing with these high school classes just about what college instructors had done with me; to get away from the details of Amphioxus and Coleochaete, significant only as connecting links in the evolutionary chain, and to come down to showing boys and girls, in relatively simple terms, how common plants and animals really live.

Today, fortunately, the new teacher of biology does not labor under this handicap, or need not. College courses themselves have changed to include matters that give a wider range of interests than those bound up in the theory of evolution alone; textbooks have been more carefully adapted and afterwards constantly revised to fit needs and interests of high school students, and professional courses, as well as opportunities for observation and practice, are often open to, if not required in the preparation of, candidates for a teaching career.

But it was not exactly this that I started out to make the subject of this paper; rather, it was the changes that have occurred in the treatment of biology itself.

To begin with, there was then no general biology course, but in its place courses in zoology, botany and human physiology. To be sure, there was sometimes a course called biology; such a course

existed in my school, but the textbook was a zoology text, and a course in botany followed, the result being that the so-called biology course dealt exclusively with animals, and in the customary manner of the time. Well do I remember the textbook I found in use in that course—practically a detailed guide to the dissection of a number of type forms, all dead, of course. I stood it for a year, and then asked leave to introduce a text that dealt more with living things and their environmental relationships, Jordan, Kellogg and Heath's "Animals", then relatively new, and far more interesting and valuable than the other for a class of young people not all of whom expected to end up as medical students.

In botany it was not so bad. The early Bergen texts had begun to appear, and in them was incorporated a series of experiments with living plants. In a way these texts took the lead in the revolt against the old-time course of "fifty plants analyzed and pressed". Also such works as Coulter's "Plants Relations", a book that had created some stir in college circles a few years before, and Kerner von Marilaun's five-volume "Natural History of Plants" had begun to have influence in bringing forward the ecological point of view.

The human physiology course, with such texts as Foster and Shore, gave a pretty detailed foundation of human anatomy in correlation with functional study—a groundwork that I somehow regret the loss of in present-day substitutions of more empirical methods of teaching hygiene.

But these separate courses were often of necessity short. I know that in botany especially, taking up the different organs of a flowering plant, and following this with a descriptive study of the different groups of cryptogams, I never felt that I could cover the ground enough to leave a well-rounded impression of the subject in anything less than a full school year.

Imagine, then, the consternation that fell upon many of us when school administrators began to demand that, owing to the need of economizing time, we thereafter crowd all these three subjects into one general biology course, to last through only a single year. Of course we had no alternative but to obey, even if grudgingly, and forthwith we began to combine and cut down our former courses far below what seemed to us a desirable, or even a reasonable, minimum. In line with this process, general biology textbooks appeared, mostly containing one-third plant, one-third animal and one-third human biology, in that order, designed each to cover one of the three school terms of the year. Such was the direction of the New York State

syllabus, which dictated that biological study should lead to, and culminate in, the study of the biology of man. There are some recent texts, particularly those of joint authorship, which still adhere to this three-division arrangement, each author being responsible for one division and treating it more or less on the old lines. Some of these texts have tended to expand to almost encyclopedic proportions. But to many of us the ground to be covered seemed even then too great for satisfactory results, such as would exert a lasting influence upon the manner of thought of our pupils, and the method, one not altogether desirable to continue. I know that we often started to make up our own courses independently, preferring to flounder about a little in our search for a better way rather than stick to one that we felt was inadequate.

At about this time, along with the changes in the treatment of biology itself, brought about by greater limitation of time, there was developing a change in our ways of looking at education. The early courses had been almost wholly informational, spreading a knowledge of the subject rather than adjusting children to their environment. After this came the "Mental discipline" idea, involving rigidly accurate and detailed measurements and drawings. But there soon followed a greater leaning toward satisfying the needs and interests of children, and an increasing lack of belief in "mental discipline", due to the discovery that "transfer of training" takes place to a less degree than we had supposed. All these changes in thought had their influence upon our aims and methods, in a way often tending to disconcert rather than to guide.

Out of this confusion of thought, coupled with passive adherence to tradition that seemed almost forced upon us by syllabus-makers, emerged one writer bold enough to break away from the old lines, dividing his book, not into plant, animal and human sections, but rather according to great life relations and processes. Respiration, for example, was treated in plants, animals and man in the same or successive chapters, and was followed by such correlated topics as seemed necessary, ventilation and dust-prevention in industries, for example. The emphasis was shifted from the study of separate groups to a consideration of how all life is alike. I can well remember with what pleasure I read over the first book of this type that I received, Gruenberg's "Elementary Biology", and how gladly I introduced it into my classes. Since then many other writers have adopted much the same plan of organization, or at least its principle, until it has become probably more nearly standard than the old three-division idea.

After all, life of all kinds is very similar; why, therefore, in a study of living things, should we not make great life-principles our main theme, stressing similarities instead of differences? In cell structure, metabolism both constructive and destructive, response to environmental conditions, geographical and climatological limitations, heredity and reproduction, division of labor and differentiation of body to correspond, in parasitism and symbiosis, all life is governed by the same laws. Naturally other things enter in to some extent, but even some of these, such as the interdependence of animals and plants, the relations of flowers and insects, the carbon, oxygen and nitrogen cycles, struggle for existence, relations of living things to man for good or ill, can better be taken up in a unified than in a divided course. In teaching biology in these large relations we are giving to our pupils the correct perspective, putting foremost the great laws, principle and processes that regulate all life, including that of man—their own lives. We are enabling them better to understand and to use the big things of their environment, and are placing minor things in proper subordinate relation. For these big things a year's course gives reasonable time, together with opportunity for the more able and interested pupils to develop further special topics in greater detail. Because it does give time, and centers around human welfare, there is probably a greater prospect of standardizing an elementary biology course along these lines, so far as standardization is desirable, than along any other.

(Note: This article was at least in part suggested by a study of the biology outline in the recent edition of the N. C. State Manual of Courses for High Schools. Educational Publication No. 703. It is apparent that the committee responsible for that outline was not unitedly in favor of departing from the older, conservative plan, since the outline presents practically a course in zoology followed by one in botany, the biology of man being joined with that of animals. It is to be noted, however, that the tone of this bulletin is rather one of suggestion and help than of dictation, its intent being more to furnish guidance where guidance is needed than to limit intelligent experimentation looking toward improvement.

*MY LIFE HISTORY AS AN OAK TREE**

By HILDA COOK
Sunderland School, Concord, N. C.

ONE BEAUTIFUL autumn day Jimmie and Jane were up on a mountain gathering chestnuts for a chestnut roast the next night. As they were coming home they passed a large oak with beautiful golden acorns on the ground. They saw an unusually large one and, thinking it would be a beautiful acorn to keep, they put it on top of their chestnuts and started on their way. As they were going down the mountain side, through the shrubbery, Jane stumbled and shook the basket, causing the large acorn to fall to the ground. The two children, not noticing their acorn, went on their way home, planning for their chestnut roast.

The place where the acorn had fallen was a very beautiful place. It was near a large crystal lake which always served as a mirror to the forest. Many leaves had fallen and it was a nice warm bed for the big oak acorn. Other leaves fell until the acorn was buried among the leaves and the trees were left bare. The snow began to fall and covered the ground. Rain fell and ice was formed over the trees and lake.

The winter months passed thus, and the spring opened with the melting of snows and flooding of valleys. Much humus was washed down from the mountains and covered the acorn deeper. The humus contained good plant food and air could pass through it freely. The sun shone warm against the soil, so the resting acorn would have plenty of heat and the melting snows and rains furnished the moisture sufficient for the germination of the acorn.

In the first warm days of spring the acorn began to absorb water to moisten its testa. I came out of my old home in a very curious way. First I pushed my roots out the small end of my home and immediately my roots began to grow downward and plough through

* The North Carolina Academy of Science at its Annual Meeting, held at Davidson College on May 6 and 7 received the unanimous report of the judges of the High School Essay Contest, announcing Miss Hilda Cook, an eighth grade pupil of the Sunderland School, Concord, N. C., the winner of the prize, a silver loving-cup. Miss Cook's subject was *My Life History as an Oak Tree*. Dr. H. B. Arbuckle of Davidson College, the Academy representative, presented the cup to Miss Cook at the Sunderland School Commencement on May 24.

This past year the subjects were confined to the fields of geography and biology, the latter including botany, zoology and physiology. The subjects for the coming year will be confined to the fields of chemistry and physics. Dr. Bert Cunningham of Duke University is chairman of the High School Committee, and further announcements from the Committee will be made later.

the humus. Then they began to obtain the first nourishment from the humus. Now getting my leaves out into the world above was very curious too. At the beginning of my new life I depended upon the food which my mother had stored up in the cotyledons and then the plumule developed and from then on, my new tiny leaves.

Now, here I was, a tiny plant in a great forest and all my food which my mother had prepared for me was used so now I had to depend upon my own self. My roots being older, I depended upon them. The primary root, being the first to go from the hypocotyl, ploughed down through the ground and began to send out other roots called secondary roots and then they sent out tertiary roots. It was necessary for me to have all these roots to get my food.

Some people wonder what my roots were made of, so I am going to tell you. The main bulk of root is composed of a certain cylinder and cortical portion which surrounds it. The outmost part of the cortex is a layer of cells forming a thin skin known as the epidermis. The tip of the root is covered by a mass of loosely attached cells forming the protective root cap. The cylinders, of which the root is made up, are easily distinguished and the main parts of each can be seen without much trouble. The epidermal cells are somewhat brick-shaped, provided with extensions called root hairs. Inside the epidermis lie several layers of rather globular, thin-walled cells and inside these, a boundary layer between the cortical or bark part of the root and the central cylinder. The former serves as channels for air and water and the latter gives toughness to the roots.

My roots hold some plant food but not so much as other parts. As I could get plenty of water, my roots did not have to go so far down on that account but they spread out to hold the upper part in place.

My roots have many little root hairs on them to absorb the water and minerals which are needed. The root hairs are extremely thin-walled tubes, springing from the epidermal cells, into which they open. The walls have no holes or pores that can be seen but they absorb as much water and dissolved minerals as are needed for the leaves.

As all living things must have water, I had to have it and I got it through my roots by osmosis. This was very important that I might have water for it helped to stiffen my stem when there was not enough woody fiber. The tiny root hairs let the water and dissolved minerals seep in through their small root hairs. The protoplasm, being thicker than the water, the walls of the root hairs would

not let it out, and the water which they would let in would always push it up to the topmost part of the limbs and leaves by root pressure. Root pressure is important as it causes the circulation of the sap in plants and is often sufficient to raise the water to heights of one hundred feet or more. But neither this, nor any other known cause is equal to the task of lifting water as high as some of our tallest trees. And the method by which that is done is unknown.

But now I have gotten the food which was needed from my roots and now I am to get it from the world above, through the stem, as that is the upper part of a plant. It is a part or organ of the plant which serves to bring roots and leaves in communication with each other. The stem also serves the important purpose of lifting the leaves up into sunlight, where they can best do their special work. After the stem had pushed up into the sunlight I developed little leaves and divided into successive sections called nodes, places where scales had been, and internodes, the portion between the nodes.

When the first leaves appeared, they were a yellowish color and you would hardly have called them leaves, but they multiplied and increased in size as the plant grew older.

The leaf is divided into three different parts, the expanded portion, or blade, the leafstalk, and a pair of appendages at the base of the petiole known as stipules. The blade leaf is full of veins. The veins carry the water and food from the stem to all parts of the leaf.

To analyze a leaf, we find a section at the upper surface of transparent cells of the epidermis. Beneath this lies a layer of elongated cells of a green color, standing at right angles to the epidermis. These are called palisade cells, from a fancied resemblance of their shape and relative position to palisades. Under this layer the leaf interior is filled with an irregularly grouped mass of green cells known as the spongy parenchyma throughout which occur numerous air spaces and in which is an occasional fibro-vascular bundle. The palisade layer or layers and the spongy parenchyma are together what makes the innermost part of the leaf.

The lower epidermis is pierced by many openings or stomata. Each stoma opens into an air chamber. The upper epidermis of this leaf contains far less stomata than the lower one. The epidermis serves as a mechanical protection to the parts beneath and prevents excessive evaporation. The palisade cells hold large quantities of green coloring matter. The cells of the spongy parenchyma share the work of the palisade cells, besides evaporating much water. The stomata admit air to the interior of the leaf, where the air spaces

serve to store and distribute it. They allow the oxygen and carbon dioxide gas to escape and, above all, they regulate the evaporation of water from the plant. The stomata are not mere holes in the epidermis, but have a somewhat complicated structure. Each stoma consists of two kidney-shaped guard cells inclosing a slit-like opening into the leaf.

The mesophyll appears to the naked eye to be green but it is made of many green structures called chlorophyll bodies or chloroplasts and the woody fibers or cells carry water into the leaves. All leaves which are healthy and in suitable temperature make their own food. They serve as little factories to the tree, so mine made the food which I needed, the starch being made from carbon dioxide and water in the presence of sunlight. And the other food was made by different processes.

Now I have told you how I got the food from my roots and leaves. Next I shall tell you how my leaves are arranged. They are, as all leaves are, arranged to secure the best possible exposure to the sun and air. Mine are arranged alternately.

I now had everything that was necessary for my new life in the forest by the crystal lake in the soft green grass. As the warm sunshine shone down upon me and the air rippled my leaves I grew during the summer. But it was drawing near autumn and the tall trees which were above me began to put on their dresses of red and gold. At first I could not understand the meaning of this and then their beautiful leaves began to flutter across the valley and into the lake. Soon I found that my leaves must turn a different color and float away and leave me. So this is what happened. First my branches and roots took all the sugary and protoplasmic contents out of the leaves so it might be used in the coming spring. The separation of the leaf from the twig is accomplished by a formation of a layer of cork cells across the base of the petiole in such a way that the latter finally breaks off across the surface of the layer and a water-proof scar is formed before the removal of the leaf and there is no waste of sap dripping from the wound where the leaf-stalk has been removed, and no chance for fungi to attack the bark or wood and cause it to decay. The deep and brilliant coloration in the autumn is wrongly supposed to be due to the action of frost. It depends merely on the changes in the chlorophyll grains and the liquid cell contents that accompany the withdrawal of the proteid material from the tissue of the leaf. The chlorophyll turns into a yellow insoluble substance after the valuable materials which accom-

pany it have been taken away, and some cell sap at the same time turns red. Some times the frost does help to break up the chlorophyll, but some of the trees showed their bright colors long before the first frost.

The losing of the leaves seemed almost like a death to our beautiful forest but when I saw the big trees dressed in their brilliant colors they looked as if they were clothed in gorgeous tapestry. Now every tree in our forest looked as if it were dead except the pines and spruces but we were not, for our slender tips and branches were green.

In the fall when all the leaves have fallen you will find little buds on the limbs and twigs where the leaves have fallen off. This is where the trees have begun a new twig or bud for another spring. These tiny buds and undeveloped leaves are very tender so the tree wraps them up nice and warm with larger leaves and the outside with tough and often hairy or resin-covered scales. They stay thus for the winter months.

The snows begin to fall and the rain descends and the mountains are again covered with the snow and ice. The months quickly passed away and the sun rose over the mountains bringing the months of spring. The snows and ice melted and the violets and grasses began to spring up and the sap and food which were stored away the autumn before began to come up and the buds are ready to burst out. They begin to grow and the outer scales fall off, one by one, as the bud grows. The outer scales leave marks when they fall off, and this is the way you can tell the age of the limbs and twigs for each autumn it prepares for the winter rest and each spring it leaves its annual rings.

To tell the age of the body of a tree, you can count the annual rings which are caused by the increase of the fibro-vascular bundles of the wood. In the spring the cells are large and then they become smaller and the pith which extended freely out towards the bark becomes compressed into thin plates so as to form the medullary rays.

This was the beginning of a new summer and all the trees began to bud and were soon in their green dresses. Summer after summer I lifted my limbs and leaves up higher and higher to the bright sunlight and my roots ploughed farther and farther into the ground to hold myself up and to protect my body from any hardship that might come in later life and to get richer and better plant food.

It was in the summer when I was growing from a sapling to a tree that many of the large trees were cut down and taken away. This

gave me more sunlight and room to grow. There were many other trees in the forest growing up as I was. One was a pine tree which always lifted its branches up to the sky. Year after year we grew, adding more and more annual rings and strong limbs and roots. The pine tree was now the tallest tree in the forest. It was one bright afternoon in the summer when the birds were singing and the flowers blooming. The air became moist and great clouds boiled in the sky. Lightning flashed and thunder roared. One great flash of lightning struck our pine tree, splitting it open from top to bottom and burning some of its leaves. Our friend had been hurt, but this was not all the hardships the forest had to bear. Sometimes there were forest fires which destroyed many young as well as old trees; the weight of ice; the glaciers; the storms, and the floods. Our friend who had been standing so bravely against the sky was cut down. It sang its own farewell song to us before it fell, then it was carried away to build the big hotel which had been started on the mountain side.

I shall never forget the summer which followed. For it was the happiest summer of my life. The hotel had been finished and many people were there. One morning in June as I looked into our crystal lake, the sun was rising over the mountain tops. I had never looked so beautiful. I was standing so tall and great out in a park, as it were, with beautiful green leaves over my wide-spread limbs. Birds' nests were hidden among them and flowers dotted the ground beneath me. Many animals had parked among my branches for I was their playground. As I raised my eyes from the lake I saw children coming from the hotel to play with me. They made swings and play houses among my limbs and played all day. I was happy for I was making some one else happy. The following days poets and authors would sit beneath my limbs and write. And tired campers would stop and eat their lunches in my shade and I would cool them with my unseen vapor.

Some of the trees are being cut down and taken away to build homes, offices, and other conveniences for man. But I was left to be a home for animals, fowls, and insects. They are glad they can render their service to man in that way but I am glad because I can make the world happy around me.

Hilda Cook received no help in writing this theme excepting as I referred her to articles and reference books and explained a few things which she did not understand in reading references, also in correcting spelling.

ETHEL KLEMN
Science Teacher.

NORTH CAROLINA'S LARGER HIGH SCHOOLS

By J. HENRY HIGHSMITH
State Supervisor of High Schools

CITY HIGH SCHOOLS—GROUP I, AA

NORTH CAROLINA is developing some high schools of the larger type. These schools are called for purposes of classification *Group I, AA*. They are really the city high schools. To be entitled to this classification a school must meet the following requirements:

1. Twelve or more teachers, holding proper certificates.
2. An average daily attendance of 310 or more students.
3. Length of term at least nine months.
4. A library containing at least 1000 volumes.
5. Adequate equipment with reference to laboratory work in Science and maps for Social Sciences.

There are twenty-four schools which meet these requirements, including the Alexander Graham Junior High School in Charlotte. The list of these schools is as follows: Burlington, Asheville, (David Millard and Hall Fletcher), Concord, Hickory, Shelby, Fayetteville, Durham, Winston-Salem, Gastonia, Greensboro, High Point, Hendersonville, Statesville, Kinston, Charlotte (Alexander Graham Junior and Central Senior High Schools), Rocky Mount, Wilmington, Greenville, Salisbury, Raleigh, Goldsboro, and Wilson. (These schools are listed alphabetically by counties).

The length of term in each case is thirty-six weeks or 180 days. Each high school is a four year high school based upon a seven year elementary school except in the following cases: Hendersonville, 12 grades; Central Senior High School, Charlotte, three years, grades 10, 11, and 12; Wilmington, 12 grades.

The following table gives a list of the schools alphabetically arranged by counties showing number of teachers, enrollment,—by years (boys and girls), average daily attendance by years (boys and girls) and number of graduates in each case.

TABLE I—I-AA HIGH SCHOOLS

Number of Teachers:			
	Male	Female	Total
Whole Time	156	480	636
Part Time	20	47	67
Enrollment:			
	Boys	Girls	Total
	7,285	8,737	16,022
Average Daily Att.:			
	6,223	7,666	13,889
Enrollment by Grade:			
First Year	2,566	2,784	5,350
Second Year	2,093	2,397	4,490
Third Year	1,493	1,859	3,352
Fourth Year	1,133	1,697	2,830
Average Daily Att. by Grade:			
First Year	2,172	2,441	4,613
Second Year	1,767	2,072	3,839
Third Year	1,270	1,643	2,913
Fourth Year	1,014	1,510	2,524
Graduates:			
	826	1,342	2,168

From the table given above it will be noted that in these twenty-four schools 636 whole time teachers and 67 part time teachers are employed. Of the 636 teachers 156 are men and 480 are women. Of the part time teachers 20 are men and 47 women.

The enrollment is 7,285 boys and 8,737 girls or a total of 16,022. The average daily attendance is 6,223 boys and 7,666 girls, making a total of 13,889.

It is significant to note in this connection that the enrollment in these twenty-four white high schools is greater than the total enrollment in all public high schools in the State in 1913-14 when 15,305 pupils were enrolled.

These twenty-four high schools graduated 826 boys and 1,342 girls, making a total of 2,168. There were 2,040 graduates of all public high schools whatsoever in 1919.

From the tables which have been given it will be seen that the R. J. Reynolds High School in Winston-Salem is the largest single high school in the State, employing last year 66 whole time teachers and 7 part time teachers, with an enrollment of 857 boys and 931 girls or a total of 1,788 students.

Charlotte has the largest enrollment counting the city as a unit. Central High School has an enrollment of 851, Alexander Graham Junior High School 623, Piedmont Junior High School 419, Vocational High School 131, making a total of 2,024. There are 75 whole time and 19 part time teachers employed in these four schools.

In studying the enrollment by years we find that there are 5,550 in the first year, 4,490 in the second, 3,352 in the third and 2,830 in the fourth. This would indicate that there is altogether too great elimination from the high school. It is impossible to say just how many of the first year students in these particular schools went on to graduation, but the number of first year pupils as compared with the fourth year is slightly over one half or 53%. This represents a tremendous loss somewhere between the beginning of high school and the end of it even in our city schools. The fourth year students represent about 15% of the total enrollment, whereas theoretically they should constitute 25%.

TABLE NO. II.

	Librarian	No. Vols.	Magazines and Newsps.	Value Lab. Equipment
Burlington	Yes	4,932	64	$1,552
Asheville				
David Millard	Yes	3,701	25	6,300
Hall Fletcher	Yes	1,080	31	8,067
Concord	Yes	1,900	23	750
Hickory	Yes	1,600	25	5,000
Shelby	No	1,677	12	1,150
Fayetteville	Part time	1,375	10	3,390
Durham	Yes	2,821	29	3,080
Winston-Salem	Yes	6,757	—	7,000
Gastonia	No	1,355	16	1,500
Greensboro	Yes	5,248	25	2,900
High Point	Yes	3,300	12	1,600
Hendersonville	Yes	1,306	31	4,100
Statesville	No	1,850	4	2,000
Kinston	Yes	3,200	45	3,639
Charlotte		1,300	—	700
Alexander Graham Jr. H.				
Central Sr. H.	Yes	3,406	30	4,160
Rocky Mount	No	1,193	4	1,800
Wilmington	Yes	3,306	20	6,400
Greenville	Yes	1,300	5	4,590
Salisbury	Yes	2,775	28	2,900
Raleigh	No	1,300	None	Not given
Goldsboro	No	1,250	10	3,675
Wilson	Yes	3,601	61	3,250
		$61,533	510	$80,103

The above table shows the number of librarians employed, the number of volumes in the library, the number of magazines and newspapers taken and the value of laboratory equipment for the teaching of the pure sciences—General Science, Biology, and Chemistry.

In addition to the equipment mentioned these schools have Home Economics equipment to the amount of $33,067; equipment for Commercial Education to the amount of $27,724; and equipment for Manual Training to the amount of $33,857. In all of the schools provided for Home Economics, Commercial Education and Manual Training the figures given would be much larger in each case if each school had reported the amount of money invested in equipment in each of these departments.

Schools of this larger type have many advantages over smaller schools. These advantages are mainly as follows:

1. Better teachers. City schools, as a rule, employ the best trained teachers available. These teachers for the most part hold Class A certificates. As a rule they have had successful experience in smaller school systems, thereby guaranteeing to the students instruction of a relatively high order.

2. There is, of course, the advantage of a relatively long term since each of these schools runs for at least 180 days.

3. Adequate equipment. City schools are relatively well equipped for school work. The laboratories for the teaching of the pure sciences are, in most instances, modernly equipped. Library facilities are considerable if not ample in each case and equipment is provided for teaching the social sciences and for the special subjects.

4. The greatest advantage which the pupils in these large schools enjoy is that of a broader and more enriched curriculum with a wider selection of subjects which makes possible greater provision for individual needs and differences. Students may not only find courses in English, Mathematics, History, and Foreign Languages, but they will find courses in Agriculture, Home Economics, Industrial Arts, the Fine Arts, Mechanical Drawing, Music, Physical Education, Commercial Education, Printing, and in at least one of the twenty-four schools a student will find opportunity for shop work leading to the building trades, to mechanics and to other trade activities.

Considerable attention is paid in these schools to the problem of Vocational Guidance. Students are given advice with reference to

the selection of a profession or trade or calling and are directed in their training for what they expect to do in life. The best vocational guidance, of course, for most students, is to keep them in school until they have secured both general and special training for doing in a worthwhile and satisfactory sort of way a part of the work of the world.

Club Activities. The value of clubs in high school is generally recognized. In provision for club activities the large school has an advantage in that the number desiring a given kind of club will more likely be sufficient to make possible the organization of a unit.

The extra-curricular or allied activities are a vital part of the work of a school. They contribute more, perhaps, to the morale of a school, certainly in many instances, than the more purely curricular work. The following activities are found in these schools:

Baseball, football, basketball, tennis, track; literary society; boys' and girls' glee clubs, band and orchestra; Hi Y; dramatics; boy scouts; girl scouts; girl reserves; commercial, science, radio, French, Latin and monogram clubs; torchlight society; art club; scholarship society.

Many of the schools publish weekly or monthly papers and monthly magazines. Some of them publish annuals. A weekly paper is perhaps the best sort of publication to foster. Monthly magazines are desirable. The publication of an annual is too expensive even for large high schools and only in rare instances should be encouraged.

Club activities make it possible for every one to find some line in which he may express himself and find satisfaction in the enterprise. It may enable a student to find himself and indicate the field in which he ought to work definitely and permanently.

It should be mentioned also that deans of girls or advisers of boys and girls are employed in many instances to the decided advantage of those who are fortunate enough to have such assistance or service.

6. It has been found by the Association of colleges and Secondary Schools of the Southern States that graduates of high schools of about the size of the average in this group of twenty-four schools do better when judged by their performance in the first year of college than the students from the very small high school or from the very large high school. It seems that the morale of the school, the pace set by the better students, the motivation of one's needs, and the contacts with superior teachers, are all conducive to a higher order of achievement on the part of students.

The problem in the development of the large high school in this State is, of course, to finance the proposition, to keep from becoming too mechanical or machine-like, and to preserve the identity of the individuality of each student. The danger is that of mass education which loses sight of the individual and his needs in favor of routine and effective administration from a purely theoretical standpoint.

At the present time only about 20% of the white boys and girls are in high schools of the type represented by the twenty-four schools here discussed and it is to be hoped that through wise planning and administration the decided advantage of such a type of high school may be extended to an increasingly large number of the boys and girls in this state.

academic institutions began in 1832 in the University of the summer schools in recent years has been stimulated by the growing

Conditions About 1870

Improved methods and materials of teaching could not develop until a new attitude toward child life appeared. And this attitude toward children did not develop until the influence of Pestalozzianism, Herbartianism, Froebelianism, and other more recent movements had appeared. Then a new conception of teaching was to replace the old with its emphasis upon deadly memorization, the monotony of "hearing lessons", and the severity of discipline.
the institute was inspirational and entertaining, and general sessions. But the work at best was doubtless fragmentary and haphazard and the effort to make the lectures entertaining was sometimes ridiculous.

The story of the movement to train teachers in the United States shows that the preparation of a sufficient number of properly trained teachers is a persistent public educational problem which faces every State. It shows also that equality of educational opportunity can never be attained until this problem is solved. From the story it may be learned that good teachers arise only among a people who themselves discriminate between the mediocre and the excellent, between that which is superficial and that which is genuine; and that the responsbility for leading a people to a proper appreciation of good teachers rests ultimately upon the governing educational authorities of the State. Improvement in the preparation of teachers can be assured only when the educational leaders are themselves satisfied with nothing less than a body of teachers possessing adequate

training and enjoying a professional recognition that will attract and satisfy any high aspirations and economic needs of the ablest men and women. Governing authority can open the doors to finer preparation for the lives of those who teach, in the interest of those who are taught, by providing for the proper education and the proper reward of men and women for the work of teaching.

EDITORIAL COMMENT

(Continued from page 193)

so, then the energies and the resources of many higher institutions now used in these two lower years may as well be released for the more advanced training of better selected students. Why can not the required work of the first two years of the usual four-year college course, that is the elementary work in the languages, the natural sciences, the social sciences, mathematics, and the rest be done just as effectively, and perhaps at somewhat less cost per student, in the junior college?

Or, look at the matter from the viewpoint of the campus environment, to say nothing of the academic attitudes and the lack of intelligent guidance, which the hordes of immature youth today encounter who are plunged pell-mell into the campus life of our larger institutions. Who is there to doubt that because of the conditions that obtain we are not suffering unnecessarily a tremendous social loss? The American public is going to ask this pertinent question one of these days: Has any institution the moral right to accept eleven hundred, or one hundred, or even ten, more freshmen than it is prepared to deal with intelligently? If the junior college can grapple successfully with these specific problems that arise directly out of and democratic conception of educational opportunity for all, it will justify its existence and it will win and hold the esteem and the support of the American people.

BOOK NOTES AND REVIEWS

PSYCHOLOGY OF ELEMENTARY SCHOOL SUBJECTS. By H. B. Reed. Ginn and Company, 1927. Pp. x + 481.

If anyone doubts the enormous amount of work which has been done on the psychology of elementary school subjects in the last ten or twelve years he has only to compare Freeman's *Psychology of the Common Branches*, published in 1916, with Reed's book, published in 1927, to be completely convinced of his mistake. In the field of reading alone enough work has been done to fill an ordinary volume. The present work brings much of this material into one volume in a summarized and organized form, with nicely annotated bibliographies, and chapter summaries which appeal so strongly to the learner.

The Psychology of Elementary School Subjects begins with a careful canvass of the principles of learning. These are found to be (a) the law of repetition, (b) and the law of association. By the latter is meant that if connections are formed in a meaningful way they are learned more easily and retained longer. Suggestions are also made concerning the most advantageous methods of securing repetitions such as, (a) the distribution of the repetitions, (b) the application of the repetition at the point of error, and (c) the importance of intensity in the repetition. One wonders why this matter of intensity is not as important as that of repetition. In many cases it seems to be even more important.

Reading is then taken up in great detail. Consideration is given to the knowledge which the photographing of eye movements has brought to this problem. The number of fixation pauses per line decreases, in the case of silent reading, from 18.6 pauses per line in the first grade to 6.4 per line in the twelfth. The quality of the material influences directly the number of pauses, the pauses varying up to 21 pauses per line for oral translation of French. An analysis is made of the causes of the speed of reading and the methods of increasing speed of reading are discussed. Similar facts are presented with reference to comprehension. In concluding the discussion of reading the attention is given to the sort of reading habits that should be formed. It is found that some attention should be given to the interests of children in reading and that beginning where children's interests are rather than where we hope they might be is productive of the best results.

Fullness of discussion has been entered into in the case of reading to furnish a sample of the completeness with which the various school subjects are treated. A similar thoroughness characterizes the treatment of the other subjects although, for obvious reasons, the treatment in no case is as full as it is with reading. Arithmetic, handwriting, spelling, language, history and geography are treated in turn in the careful manner illustrated by reading.

In addition to a few typographical errors there are a few errors of fact. On pages 119-120 after adducing experimental evidence that there is a high correlation between arithmetic problems and tests of general intelligence the author makes this conclusion, "We may therefore assume that one's ability to solve reasoning problems in arithmetic depends very greatly upon his intelligence." Now if there is one thing clear in modern statistical procedure it is that there is no necessary causal relation between two highly correlated entities.

Correlation merely shows the degree of resemblance. The "therefore" of the sentence is then, poorly taken. We may assume this fact but not for the reasons assigned. Furthermore it seems a little old fashioned to use imitation as an instinct.

As a whole the book is a thoroughly good piece of work. It is careful and scholarly, desiderata so devoutly to be wished for and yet so seldom found in modern books of education. And yet despite its thoroughness and friendly contact with the sources of information it is clear and understandable with hundreds of references to practical procedures. It should be as indispensable to the student of elementary education as Quain's *Anatomy* is to the physician. —A. M. JORDAN.

GEOGRAPHY IN THE JUNIOR HIGH SCHOOL; REPORT OF THE NATIONAL COUNCIL COMMITTEE ON HIGH SCHOOL GEOGRAPHY. Journal of Geography, vol. XXVI, No. 6, Sept., 1927.

Not only all geography teachers, but those of the other social sciences and of natural sciences as well, will be interested in this illuminating report, presented as a contribution toward the great problem of curriculum revision now being undertaken throughout the country. For geography links together the physical, biological and social problems of civilization. To quote from the report, it "is essentially an interpretative study of the great industries of continents and regions; of trade and transportation; of the need and the methods of conservation of our natural resources; of the ideals, aspirations, and problems of nations; of the geographic factors at the basis of the international problems of today; of the political, economic and commercial ties that bind the nations into a world family—each discussed in its specific physiographic and climatic setting."

The objectives of such geographic study are further set forth under the three headings, Knowledge, Habits, Appreciations, the first and last stressing particularly social problems and social duties. Two major fields of study are suggested for junior high work:

A. Resources and Industries of the United States and Their World Relations.

B. The Interdependence of Nations and Regions.

A suggested list of topics for each of these major fields is then given, together with advice as to their interpretation.

Taken as a whole, the outline is a distinct departure from the conventional geography of years past, in the direction of a clearer interpretation of social relations. While teachers of unified social science today may possibly not be willing to accept the suggestion of the Committee that geography, or indeed any other old-line subject, be made the officially named "core" of their courses, they will find here, nevertheless, a viewpoint helpfully suggestive, together with much that will assist in the organization of the courses themselves.—C. E. PRESTON.

INTRODUCTION TO CHEMISTRY. By Neil E. Gordon. In New-World Science Series. Yonkers-on-Hudson, New York: World Book Company. Cloth. xx. + 600 pages. Illustrated. Price $2.20.

The science textbook cannot afford to grow "stale;" it must contain new ideas and these must be based on the advancement of knowledge and proved application.

Introductory Chemistry does contain the new facts and principles now approved by scientists. These are not made mere additions to the chemistry course; they constitute an integral part of it.

The book is divided into two parts, the first part containing those fundamentals of the science recommended in the revised report of the committee on chemical education of the American Chemical Society. This part also meets the requirements of the College Entrance Board for a year's high school credit. Part II contains additional optional topics from which selection may be made to supplement the course in accordance with the class needs.

It is difficult to list all the improvements that appear in this textbook:

(1) It is clear, and it does not "let down" in interest value.

(2) Many things which were previously difficult to students are made easy by the authors skillful use of the newer theories. It has been shown, for example, that the electrical theory of the structure of matter is interesting to high school students and they can readily understand it. Dr. Gordon uses it to give a meaning to chemistry which, without this theory, the student does not get.

(3) The project method and the unit-study idea have been used wherever their adaptation to chemistry teaching is practical.

(4) A division has been made into units of study with questions, experiments, and reading references accompanying each and the whole organization has been planned to stimulate and guide the student in carrying out his own work.

The difficulties encountered in teaching chemistry are often the result of the student's attitude toward his work and his failure to "think together" the laboratory and textbook work. It is with this in mind that the author has blended experiments and text, following the true scientific method by which the student discovers for himself, rather than has things told to him. This plan should prevent mere memorizing of text and make chemistry an actual part of the world for the student.

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